

CHARLES COWAN, PhD, Volume II, 2-18-09

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THE UNITED STATES DISTRICT COURT FOR THE  
NORTHERN DISTRICT OF OKLAHOMA

W. A. DREW EDMONDSON, in his )  
capacity as ATTORNEY GENERAL )  
OF THE STATE OF OKLAHOMA and )  
OKLAHOMA SECRETARY OF THE )  
ENVIRONMENT C. MILES TOLBERT, )  
in his capacity as the )  
TRUSTEE FOR NATURAL RESOURCES )  
FOR THE STATE OF OKLAHOMA, )

Plaintiff, )

vs. ) 4:05-CV-00329-TCK-SAJ

TYSON FOODS, INC., et al, )  
Defendants. )

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VOLUME II OF THE VIDEOTAPED  
DEPOSITION OF CHARLES COWAN, PhD, produced as a  
witness on behalf of the Plaintiff in the above  
styled and numbered cause, taken on the 18th day of  
February, 2009, in the City of Tulsa, County of  
Tulsa, State of Oklahoma, before me, Lisa A.  
Steinmeyer, a Certified Shorthand Reporter, duly  
certified under and by virtue of the laws of the  
State of Oklahoma.

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1       **Q**       And is it your understanding, sir, that SPSS  
2       has a pairwise deletion function that operates in  
3       the same way as the SysStat pairwise deletion  
4       function?

5       **A**       Yes, sir. 08:44AM

6       **Q**       In your report when you state, I think at  
7       several occasions, that Dr. Olsen substituted mean  
8       values, would it be more precise to say that you  
9       believe that Dr. Olsen's methodology in SysStat had  
10      the effect of substituting mean values? 08:45AM

11      **A**       Well, I wouldn't use the word methodology, but  
12      the remainder of your statement is correct, that  
13      it's the effect of using that default, which has the  
14      same effect as substituting the means.

15      **Q**       But -- but Dr. Olsen employed -- rather than 08:45AM  
16      actually doing what you did, which was I guess to  
17      take the means of the data and then plug them in to  
18      those parameters -- excuse me, to those observations  
19      for the missing parameters --

20      **A**       Yes, sir. 08:45AM

21      **Q**       -- he simply loaded those observations with  
22      the missing data in to SysStat and selected pairwise  
23      deletion and let the program come to the results; is  
24      that correct?

25               MR. TODD: Can I interrupt for a second? 08:46AM

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1 Are you posing this as a hypothetical as to what Dr.  
2 Olsen did?

3 MR. PAGE: That's a question; that's a  
4 question.

5 MR. TODD: Okay, and you're testifying as 08:46AM  
6 to what Dr. Olsen did here?

7 Q Well, I thought we've already established that  
8 you believe that Dr. Olsen used pairwise deletion,  
9 that you ran it. Am I mistaken on that?

10 A No. I said that I was able to replicate his 08:46AM  
11 results, and so he could have gotten those results  
12 doing either of the procedures.

13 Q That's if you're correct in saying that the  
14 mean values do actually create -- if you substitute  
15 the mean values, you actually get the same results 08:46AM  
16 as pairwise deletion; correct?

17 A If --

18 Q If that's true?

19 A If that's true?

20 Q Yes. 08:46AM

21 A Then, yes.

22 Q So are you testifying you really don't know  
23 what Dr. Olsen ran when he ran SysStat?

24 A No. What I'm testifying is that it doesn't  
25 matter because mathematically, they're identical. 08:46AM

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1 Q Well, answer the question, though, please,  
2 sir. Do you know -- can you testify today whether  
3 Dr. Olsen substituted mean values or ran pairwise  
4 deletion when he ran his PCA with data that had  
5 missing variables?

08:47AM

6 A No, because Dr. Olsen didn't provide any of  
7 the summary documentation that tells me how he ran  
8 his programs.

9 Q So let me go back to my original question then  
10 before the objection. So what you're stating today  
11 is that you don't know how Dr. Olsen ran his PCA  
12 with the missing observations?

08:47AM

13 A Yes, that's what I'm saying.

14 Q So on Page 23, for example, of your report --

15 A Yes, sir.

08:48AM

16 Q -- Paragraph 54, would you turn to that,  
17 please?

18 A Sure. Paragraph 23?

19 Q Yes, sir.

20 A I'm sorry, Page 23, Paragraph 54? I messed  
21 up.

08:48AM

22 Q I did, too, by saying yes, sir. It's  
23 Paragraph 54, Page 23.

24 A Yes, sir.

25 Q Second sentence, when you say when he is

08:48AM

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1 missing an observation, he substitutes the mean  
2 regardless of what he knows about the other  
3 variable. Would it be more precise to say, sir,  
4 that you believe he substituted the mean?

5 **A** No, I don't -- I don't believe that at all 08:48AM  
6 because since the two procedures are mathematically  
7 equivalent, I expect Dr. Olsen, if he is running the  
8 program and choosing the defaults, to understand  
9 what the effect of the choice of the default is.

10 **Q** Would you read the second sentence of 08:49AM  
11 Paragraph 54, please?

12 **A** Yes, sir.

13 **Q** Would you read it out loud for the court?

14 **A** When he is missing an observation, he  
15 substitutes the mean regardless of what he knows 08:49AM  
16 about the other variable.

17 **Q** What do you mean by he substitutes the mean?

18 **A** The effect of his choice of defaults is to  
19 substitute the mean. Mathematically they're all  
20 exactly the same. 08:49AM

21 **Q** Wouldn't you have been more accurate if you  
22 would have said the effect of running pairwise  
23 deletion in your opinion would be the substitution  
24 of the mean?

25 **A** That is -- that's another way to express the 08:49AM

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1 same thing. I'm not convinced that it would be the  
2 more accurate statement.

3 **Q** Did you create a database with Dr. Olsen's  
4 missing data where you substituted the means?

5 **A** Yes. 08:50AM

6 **Q** Why did you do that if the effect is the same  
7 if you just run pairwise deletion?

8 **A** Because there were other analyses that I could  
9 run with all of the values included over and above  
10 the principal components. 08:50AM

11 **Q** For example?

12 **A** Recalculation of standard errors, for example.

13 **Q** Anything else?

14 **A** I believe I used -- excuse me. Oh, yes. I  
15 also wanted to have a complete dataset so that I 08:51AM  
16 could perform the analyses that I performed that we  
17 see somewhere else in the report. I believe it's  
18 Chart 6, and to be able to do that, I needed to have  
19 complete data because both SysStat and SPSS, if they  
20 detect a missing value, will throw that value out of 08:51AM  
21 the analysis.

22 **Q** Which is Chart 6; would you identify that for  
23 the Record, please?

24 **A** It's the one that is completely filled in in  
25 the dark blue. 08:51AM

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